

TWO NEW SPECIES OF WATER STRIDERS OF THE GENUS  
*TREPOBATES* UHLER (HEMIPTERA: GERRIDAE)

PAUL D. KITTLE

Department of Biology, Southeast Missouri State University, Cape Girardeau, Missouri 63701.

---

*Abstract.*—*Trepobates carri*, new species, is described from Guatemala and is also known from Belize, Cuba, Honduras, Jamaica, Mexico, and Texas. *Trepobates polhemi*, new species, is described from Mexico.

---

In the course of my studies on *Trepobates*, I have discovered two new taxa which are described below.

*Trepobates carri* Kittle, New Species

Figs. 1-7

*Trepobates pictus* (Herrich-Schaeffer) [misidentification]; Drake and Harris, 1932: 111.

*Diagnosis.*—*Trepobates carri* can be separated from all other species of *Trepobates* except *T. pictus* by the presence of a posterior mesonotal projection in the female. Although very similar to *T. pictus*, *T. carri* differs from it in having (1) a more tumid, shorter, and hairier posterior mesonotal projection in the female; (2) a shorter first antennal segment, especially in the male; (3) a slightly different color pattern; and (4) a different shaped paramere (compare Figs. 7 and 8).

*Description.*—Length: Male 3.09-3.66 mm; female 3.27-4.11 mm. Width: Male 1.22-1.45 mm; female 1.53-1.94 mm.

*Head:* Marked with black and light yellow (Figs. 2-4). Antennal segment 1 slightly bowed at base, 0.76-0.99 mm long in male, 0.63-0.84 mm long in female. Antennal segments 2-4 straight, 3 without long hairs.

*Thorax:* Pronotum marked with black and light yellow (Figs. 2-4). Pronotum in alate form prolonged posteriorly, with light yellow lateral, longitudinal stripes usually continuous with light band along posterior margin, sometimes with an anterior median yellow stripe. Anterior femur moderately bowed just beyond middle in male, slightly bowed near base in female, not constricted at apex. Anterior femur 1.19-1.46 mm long in male, 0.99-1.27 mm long in female. Anterior tibia slightly bowed in male, straight in



Fig. 1. Distribution of *Trepobates carri* (circles) and *T. polheimi* (triangles).

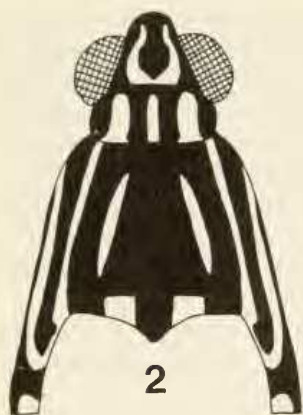
female. Mesonotum with black and light yellow markings (Figs. 2–4); prolonged posteriorly in female, this projection with long hairs and variable in shape (Figs. 5 and 6); a patch of very short, dark hairs usually present along median portion of mesonotal-mesopleural line in female. A light yellow mesopleural stripe present posterior to black postocular stripe of pronotum. Mesosternum with a pair of small, oval, widely separated brown spots often present posteriorly, especially in female. Middle femur of male with a thick ventral fringe of short, dark brown hairs; these hairs, at maximum length, approximately 20–40% of diameter of femur. Middle femur 1.45–1.88 mm long in male, 1.59–1.95 mm long in female. Middle tibia of male with a single row of short hairs along basal  $\frac{1}{3}$  which gradually decrease in length posteriorly; these hairs, at maximum length, approximately 40% of diameter of tibia. Middle tibia 2.71–3.76 mm long in male, 2.85–3.59 mm long in female. Metanotum black with paired, light yellow markings, without a median patch of hairs. Posterior femur without long hairs at base. Posterior femur 1.92–2.60 mm long in male, 1.97–2.48 mm long in female.

*Abdomen:* Abdominal terga mostly black, some marked with light yellow, especially in female, almost entirely black in dark individuals; some gray-blue bloom present, especially in male. Ventrites mostly pale yellow, dark

brown along anterior margins and laterally in some individuals; ventrite 7 in female with a row of moderately long, dark brown hairs along posterior margin, this row interrupted at middle. Connexival segments mostly light yellow with black anterior margins; lateral margins of segments 5 and 6 in male and 5-7 in female with moderately long, dark hairs. Connexiva with moderately long, dark hairs at apex and very slightly produced posteriorly but without long spines in female. Abdominal segment 8 of male with scattered, short, brown hairs ventrally. Pygophore with several long, dark brown hairs at middle; short, pale pubescence posteriorly. Paramere sharply pointed (Fig. 7) and shaped different from that of *T. pictus* (Fig. 8).

Holotype.—Guatemala: Apterous ♀, pond, 3 mi. S Tikal, Peten, CL 653, 2 Jan 1973, J. T. Polhemus, in J. T. Polhemus Collection, Englewood, Colorado.

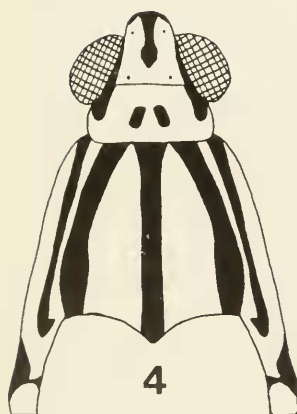
Paratypes.—BELIZE: Beaver Dam Cr., 15 mi. E Roaring Creek, 27 Dec 1973 (1 ♂, 2 ♀; JTP). CUBA: Santiago de Las Vegas, 13 Nov 1922 (1 ♀; UK); Consolacion del Sur, 16 Apr 1930 (1 ♂, 1 ♀; NN). GUATEMALA: pond, 3 mi. S Tikal, Peten, 2 Jan 1973 (17 ♂, 30 ♀; JTP, PDK). HONDURAS: Tela, 15 Mar 1936 (16 ♂, 31 ♀; UK). JAMAICA: Port Antonio (1 ♀; AMNH); pond, St. Ann, Feb. 1928 (1 ♀; UK). MEXICO: *Campeche*: Champoton Janataya, 9 Jul 1932 (1 ♀; USNM). *Nuevo Leon*: Rio Cabezano, 17 mi. N Linares, 14 Dec 1969 (1 ♂; JTP). *San Luis Potosi*: 3 mi. W El Naranjo, 5 Jun 1965 (1 ♂, 1 ♀; JCS). *Tamaulipas*: stream, El Salto, 14 Dec 1969 (2 ♀; JTP). *Veracruz*: 3 mi. W Paso de Ovejas, 17 Aug. 1959 (1 ♀; USNM); stream, 3 mi. N Conejos, 6 Jan 1971 (4 ♂; JTP); borrow pit, 14 mi. N Nautla, 7 Jan 1971 (1 ♀; JTP); stream, 17 mi. S Tuxpan, 7 Jan 1971 (2 ♂; JTP); stream, 19 mi. N Conejos, 6 Jan 1971 (2 ♂; JTP); stream, S Gutierrez Zamora, 7 Jan 1971 (1 ♂, 2 ♀; JTP); 15.8 mi. S Tampico, 19 Apr 1974 (4 ♂, 10 ♀; TAMU); 16 mi. S La Tinaja, 4 Jan 1971 (3 ♀; JTP); 19 mi. SE Tantoyuca, 8 Jan 1971 (7 ♂, 8 ♀; JTP, PDK). *Yucatan*: Carlos Morales Escuela Cenote, Merida, 23 Jul 1932 (3 ♂, 2 ♀; UK, USNM); Uki Cenote, Motul, 26 Jul 1932 (6 ♀; UM, USNM); Manzanilla Cenote, Merida, 23 Jul 1932 (6 ♀; UM, USNM); Chapultapec Cenote, Merida, 20 Jul 1932 (6 ♀; UK, UM, USNM); Geiser Cenote, Merida, 19 Jul 1932 (3 ♂, 3 ♀; UM, USNM); Huntun Cenote, Piste, 19 Jun 1932 (1 ♀; UM), 20 Jun 1932 (1 ♂, 4 ♀; UK, UM, USNM); Choch Cenote, Piste, 21 Jun 1932 (2 ♂, 5 ♀; UK, UM, USNM); Ciruak Cenote, Piste, 22 Jun 1932 (8 ♀; UK, UM, USNM); Ixil Cenote, Chichen Itza, 15 Jun 1932 (1 ♂, 1 ♀; UK, UM); Xanaba Cenote, Chichen Itza, 25 Jun 1932 (2 ♀; UM); Xcan Yui Cenote, Chichen Itza, 16 Jun 1932 (1 ♀; UM), 17 Jun 1932 (1 ♂, 9 ♀; UK, UM, USNM). UNITED STATES: *Texas*: Cameron Co.: 28 Dec 1967 (1 ♂, 1 ♀; NTSU). La Salle Co.: Nueces River, 1 mi. S Cotulla, 13 Jun 1976 (1 ♂, 1 ♀; PDK). Starr Co., Arroyo Salado, 14 mi. E Rio Grande City, 11 Jun 1975 (2 ♂, 1 ♀; CLS). Zapata Co.: pond, Zapata, 13 Jun 1976 (2 ♀; PDK).



2



3



4



5



6



7

0.1 mm



8

Figs. 2-7. *Trepobates carri*. 2-4, Variation of color pattern in female. 5-6, Variation of posterior mesonotal projection. 7, Paramere. Fig. 8, *T. pictus*, paramere. (Scale lines = 0.5 mm except as noted.)

Distribution.—*Trepobates carri* has been collected in southern Texas, Mexico, Belize, Guatemala, Cuba, Honduras, and Jamaica (Fig. 1).

Variation.—The color pattern is highly variable (Figs. 2–4), and individuals examined from Yucatan, Mexico, are almost entirely dark dorsally. The posterior mesonotal projection in the female is somewhat variable in length, tumidity, and hairiness (Figs. 5, 6), and Yucatan specimens have the most tumid and hairy projections. Hairs along the median portion of the mesonotal-mesopleural line usually are present in the female, but are absent in some individuals. Brown mesosternal spots were often present, especially in the female and darker specimens. Thirty-seven percent of the specimens examined were alate.

Biology.—*Trepobates carri* has been taken from both lentic and lotic habitats, including creeks, rivers, ponds, borrow pits, and sinkholes. I collected *T. carri* in association with *T. subnitidus* Esaki and *Rheumatobates hungerfordi* Wiley in Texas. Collection records are known from November through April and June through August.

Etymology.—This species is named in honor of the late Professor Lloyd G. K. Carr, Rio Grande College, Rio Grande, Ohio, who first stimulated my interest in entomology.

Remarks.—I have examined the specimen upon which Drake and Harris (1932) based their record of *T. pictus* from Jamaica and determined that it is *T. carri*. Hungerford (1936) referred to this taxon as *T. sp.*

### *Trepobates polhemi* Kittle, New Species

Figs. 1, 9–14

Diagnosis.—*Trepobates polhemi* can be easily separated from its congeners by the patch of long hairs at the posterior end of the mesonotal-mesopleural line, the long hairs along the basal inner margin of the posterior femur, and the short hairs on the seventh ventrite of the female, and the relatively large size and long appendages in both sexes.

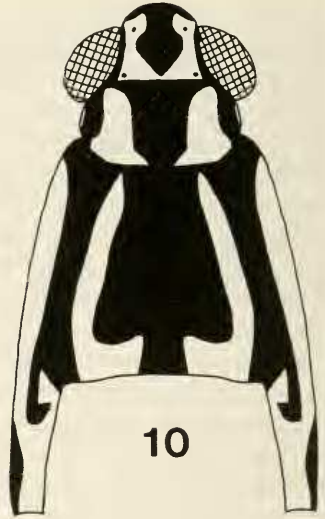
Description.—Length: Male 3.61–4.11 mm; female 4.16–4.80 mm. Width: Male 1.36–1.52 mm; female 1.62–1.98 mm.

*Head*: Marked with black and light yellow (Figs. 9–11). Antennal segment 1 slightly bowed at base, 0.96–1.09 mm long in male, 0.96–1.12 mm long in female. Antennal segments 2–4 straight, 3 without long hairs.

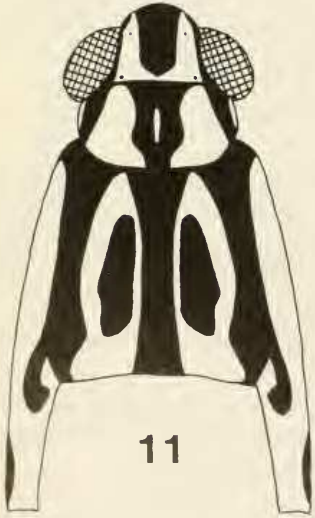
*Thorax*: Pronotum marked with black and light yellow (Figs. 9–11). Pronotum in alate form prolonged posteriorly, black with a light yellow band along posterior margin, with light yellow lateral stripes usually continuous with band along posterior margin, and sometimes with an anterior median yellow stripe. Anterior femur strongly bowed just beyond middle in male, only slightly bowed at base in female; apex not constricted but slightly swollen in male. Anterior femur 1.32–1.55 mm long in male, 1.40–1.72 mm long in



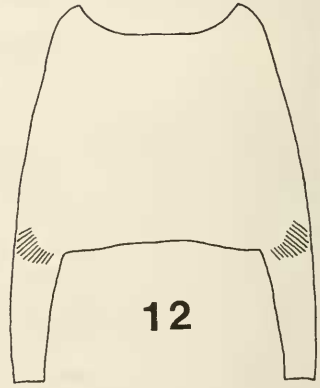
9



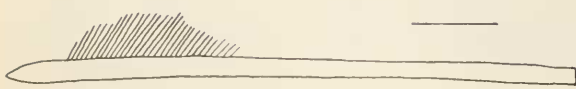
10



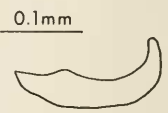
11



12



13



14

female. Anterior tibia very slightly bowed in male, straight in female. Mesonotum with black and light yellow markings (Figs. 9–11) and not prolonged posteriorly; a patch of long, dark hairs at posterior end of mesonotal-mesopleural line in female (Fig. 12). A light yellow mesopleural spot absent posterior to black postocular stripe of pronotum. Middle femur of male with a thick ventral fringe of long, dark brown hairs, these hairs, at maximum length, approximately 55–75% of diameter of femur. Middle femur 2.06–2.41 mm long in male, 2.32–2.83 mm long in female. Middle tibia of male with a single row of hairs along basal  $\frac{1}{2}$  which gradually decrease in length distally, these hairs, at maximum length, approximately 85–125% of diameter of tibia. Middle tibia 3.89–4.58 mm long in male, 4.46–4.98 mm long in female. Metanotum black, with paired, light yellow spots; rarely with a median patch of long hairs in female. Posterior femur with a dense fringe of very long hairs along basal inner margin in female (Fig. 13). Posterior femur 2.93–3.37 mm long in male, 3.29–3.91 mm long in female.

*Abdomen:* Abdominal terga mostly black, some marked with light yellow, especially in female; mostly covered with a gray-blue bloom, more extensive in male. Ventrites mostly pale yellow with some black along sides, especially in male; ventrite 7 in female with a row of short, mostly light hairs along posterior margin, these hairs not readily visible. Connexival segments light yellow with black margins; lateral margins of segment 5 in male with moderately long, dark hairs, segment 5 and sometimes 4 with long, dark hairs and segments 2 and 3 sometimes with moderately long hairs in female; connexiva not produced at apex into long spines. Abdominal segment 8 of male with very short, thin, pale pubescence ventrally. Pygophore with very short, pale pubescence posteriorly. Paramere as in Fig. 14.

*Holotype.*—Mexico: Apterous ♀, stream, 2 mi. S Cuautla, Morelos, CL 1036, 25 Apr 1964, J. T. and M. S. Polhemus, in J. T. Polhemus Collection, Englewood, Colorado.

*Paratypes.*—MEXICO: *Distrito Federal:* Mexico City, 7 Jul 1937 (4 ♂; UK). *Guerrero:* stream, 40 mi. N Acapulco, 26 Apr 1964 (1 ♂, 2 ♀; JTP); La Sabana, 20 Oct 1936 (1 ♂, 11 ♀; UK). *Morelos:* stream, 20 mi. S Cuernavaca, 27 Apr 1964 (7 ♂, 6 ♀; JTP, PDK); stream, 5 mi. W Zacatepec, 25 Apr 1964 (2 ♂, 2 ♀; JTP); river, 4 mi. N Amacuzac, 25 Apr 1964 (2 ♂, 3 ♀; JTP); river, 8 mi. E Zacatepec, 25 Apr 1964 (1 ♂; JTP); stream, 2 mi. S Cuautla, 25 Apr 1964 (21 ♂, 27 ♀; JTP, PDK); Acatlipa, 5 May 1944 (1 ♀; UK); Mazatepec, 29 Apr 1944 (11 ♂, 10 ♀; UK). *Nayarit:* river, Santa Cruz, 8 Jun 1975 (1 ♂, 1 ♀; JTP); stream, 5 mi. E Tuxpan, 21 Apr 1964 (11

←

Figs. 9–14. *Trepobates polhemi*. 9–11, Variation of color pattern in female. 12, Mesonotum of female. 13, Posterior femur of female. 14, Paramere. (Scale lines = 0.5 mm except as noted.)

♂, 12 ♀; JTP, PDK); 23 mi. NW Tepic, 10 Sep 1972 (1 ♂, 1 ♀; USU); stream, 15 mi. E San Blas, 21 Apr 1964 (2 ♂; JTP); river, San Blas, 7 Jun 1966 (1 ♂, 1 ♀; JTP), 28 Nov 1968 (1 ♂; PDK); San Blas, 17–21 Sep 1953 (1 ♀; JTP); spring, San Blas, 3 Jun 1966 (1 ♀; JTP). *Sinaloa*: Rio Presidio, Villa Union Presidio, 21 Jul 1952 (1 ♂, 1 ♀; JTP); Arroyo Sonolona, 18.5 mi. E Culiacan, 2 Apr 1955 (7 ♂, 11 ♀; UM); Los Mayos, 24 Jul 1952 (5 ♂, 11 ♀; JTP, PDK); 10 mi. N Los Mochis, 23 Apr 1977 (1 ♂, 2 ♀; USU). *Sonora*: Arroyo Cuchujaqui, 9 mi. E Alamos, 17 Feb 1957 (1 ♂, 1 ♀; UM); Rio Cuchujaqui, 5 mi. E Alamos, 11 Jun 1974 (2 ♂; PDK); Arroyo El Cajou, Cajou, 16 Feb 1957 (2 ♀, UM); Arroyo Cuchujaqui, Alamos, 21 Mar 1967 (1 ♂; JTP); Arroyo Cuchujaqui, 5 mi. ESE Alamos, 29 May 1966 (3 ♂, 2 ♀; JTP).

Distribution.—*Trepobates polhemii* has been collected in the Distrito Federal and five states of Mexico (Fig. 1).

Variation.—*Trepobates polhemii* is variable in color pattern (Figs. 9–11). Metanotal hairs may be present or absent in the female. The alate form apparently is uncommon and represented 14% of all specimens examined.

Biology.—This species has been collected from lotic habitats, including creeks, rivers, and a large spring. Collection records are known for each month from February through July and September through November.

Etymology.—This species is named in honor of John T. Polhemus, Englewood, Colorado, for his many contributions to our knowledge of the systematics of aquatic and semiaquatic Hemiptera.

#### ACKNOWLEDGMENTS

I express appreciation to the following individuals and institutions who loaned material for this study: Peter D. Ashlock, University of Kansas, Lawrence (UK); Richard C. Froeschner, National Museum of Natural History, Washington, D.C. (USNM); Wilford J. Hanson, Utah State University, Logan (USU); Thomas E. Moore, University of Michigan, Ann Arbor (UM); Nico Nieser, Rijksuniversiteit Utrecht, Netherlands (NN); John T. Polhemus, Englewood, Colorado (JTP); Joseph C. Schaffner, Texas A&M University, College Station (JCS, TAMU); Randall T. Schuh, American Museum of Natural History, New York (AMNH); Cecil L. Smith, University of Georgia, Athens (CLS); and Kenneth W. Stewart, North Texas State University, Denton (NTSU).

#### LITERATURE CITED

- Drake, C. J. and H. M. Harris. 1932. Some miscellaneous Gerridae in the collection of the Museum of Comparative Zoology (Hemiptera). *Psyche* (Camb. Mass.) 39: 107–112.
- Hungerford, H. B. 1936. Aquatic and semiaquatic Hemiptera collected in Yucatan and Campeche. *Carnegie Inst. Wash. Publ. No. 457*, pp. 145–150.